

INTEGRATED
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TITLE:
Parcel D Overall Arsenic Excavation Area
Boeing C-6 Facility
Los Angeles, CA

DWN:	DES.:
JDL	JDL
CHK:	APPD:
JFH	JPO
DATE:	REV.:
08/18/99	1

PROJECT NO.:
B0C6\PDSAP
FIGURE NO.:
6-2



6.1.2 Placement of Excavated Soil

Soil deemed non-hazardous was stockpiled in a designated area at the southeast corner of Parcel D. Soil characterized as non-RCRA hazardous waste was stockpiled along the eastern border of Parcel D. Since the eastern and southeastern portions of the property do not have a surface cover (i.e., concrete or asphalt), an impermeable plastic sheet was placed on the ground prior to stockpiling. At the end of each working day, an additional plastic sheet was placed and secured over the stockpiles to prevent exposure of the soil to the atmosphere.

In addition to the stockpile in the southeast corner of the parcel, five small stockpiles (approximately 8 cubic yards each) were placed on the existing Francisco Street along the northern border of Parcel D. The soil in the stockpiles was excavated from a 25-foot radius of boring B3 prior to the determination that soil was impacted beyond that extent. It was then determined that a larger area would be required for stockpiling. These stockpiles were underlain and covered with plastic sheets to prevent exposure to the atmosphere. Since this soil was characterized as non-hazardous, it was moved to the stockpile in the southeast corner of the site, which was bound for the Bradley Landfill.

6.1.3 Off-Site Disposal

Between July 13 and August 13, 1999, approximately 42 cubic yards of non-RCRA hazardous waste soil were excavated and transported to the Kettleman Hills Landfill for disposal, and approximately 8,200 cubic yards of non-hazardous waste soil was transported to Bradley Landfill to be used as daily cover. Disposal of soil at the Bradley Landfill was in accordance with the RWQCB-approved Waste Discharge Requirements permit, dated July 29, 1999 (File No. 88-57-033 (99)).

The soil was trucked to the aforementioned disposal facilities using end-dump trucks. Loaded trailers were covered with solid, one-piece tarps during transport of contaminated soil to the



designated disposal facility. A detailed description of the disposal program is presented in the scope of work developed for the Boeing Realty Alternate Daily Cover Project (Chemical Waste Management 1999). Soil was transported to Bradley Landfill in a total of 546 truckloads. Four truckloads were used to transport the non-RCRA hazardous waste to Kettleman Hills Landfill. A Waste Discharge Requirement Monitoring and Reporting document (IESI 1999f) was submitted to the RWQCB documenting the transportation and disposal activities. Manifests generated during this effort are contained within the monitoring and reporting document.

6.1.4 Land Surveying

The following excavations and sampling points were surveyed by a registered land surveyor using accuracies of ± 0.1 feet:

- Isolated excavation pits,
- Horizontal extent of the excavation for the top 1.5 feet,
- Confirmation sampling locations (discussed in Section 6.2), and
- All additional excavations required when confirmation sampling indicated remaining arsenic concentrations above 14 mg/kg.

The scaled base map of the site showing the locations of all surveyed features is presented in Figure 6-3.

6.1.5 Backfilling

The excavated area will be backfilled using on-site soil from Parcel D, determined to be non-impacted during the Parcel D investigation, and soil imported from non-contaminated sites. All soil imported to the C-6 facility are screened for VOCS, SVOCS, TPH PCBS, pesticides, and metals. No sources exhibiting compound concentrations greater than the site-specific HBRGs (IESI 1997) are imported to the site.



6.2 POST-EXCAVATION CONFIRMATION SAMPLING

Confirmation soil sampling was conducted to ensure that elevated concentrations of arsenic (above the HBRG of 14 mg/kg) did not remain following the excavation activities. A total of 158 confirmation samples were collected during the Parcel D excavation. Figure 6-3 shows the location of arsenic confirmation samples. All confirmation samples were analyzed for arsenic only. The samples were submitted to the laboratory on a 24- or 48-hour turnaround time. The protocols used for confirmation sampling at the isolated excavation areas and the delineated arsenic-impacted area are presented below.

Isolated Excavation Areas

Subsequent to the isolated excavation of soils deemed non-RCRA hazardous, the side-walls and bottom of the pits were sampled and submitted for arsenic analysis. If the confirmation sample results exhibited total arsenic concentrations above 100 mg/kg, additional soil was excavated and additional confirmation samples were collected. If the confirmation sample results for the side-walls exhibited total arsenic concentrations below 100 mg/kg, no further excavation was conducted on these isolated excavation areas since the remaining arsenic-impacted soil was excavated during the removal of the top 1.5 feet of soil. Since no confirmation samples of the bottoms exhibited concentrations above 14 mg/kg, no further excavations were required there. Post-excavation confirmation sampling results for the pit bottoms are presented in Table 6-2.

In the areas where excavation extended below 1.5 feet (isolated excavation areas), confirmation samples were collected from the side walls and bottom. Because the top 1.5 feet of soil was removed following the excavation of the isolated areas, the side wall samples were collected at depths between 1.5 and 2.5 feet bgs. The side-wall and bottom confirmation samples were submitted to the laboratory for expedited analysis of arsenic. If the confirmation sample results



TABLE 6-2
POST-EXCAVATION CONFIRMATION SAMPLING RESULTS
FOR TOTAL ARSENIC
BOEING-C-6 FACILITY, PARCEL D

Date	Time		Sample No.	Arsenic (mg/kg)	Location	Comments
7/16/99	925	Pit 1	Par D-C175W-5	4.3	bottom	No further vertical excavation req'd
7/16/99	955	Pit 2	Par D-C50N-5	4.3	bottom	No further vertical excavation req'd
7/16/99	1015	Pit 3	Par D-C75NE-5	7.5	bottom	No further vertical excavation req'd
7/16/99	1035	Pit 4	Par D-C125NE-5	8.4	bottom	No further vertical excavation req'd
7/16/99	1050	Pit 5	Par D-C150NE-5	11	bottom	No further vertical excavation req'd
7/20/99	910	Pit 6	Par D-C75E-5A	6.7	bottom	Addit. 0.5 ft excavated 7/20/99; No further vertical excavation req'd
7/16/99	1350	Pit 7	Par D-C100E-5	6.1	bottom	No further vertical excavation req'd
7/16/99	830	Pit 8	Par D-C75SE-5	11	bottom	No further vertical excavation req'd
7/16/99	815	Pit 9	Par D-C100SE-5	7.2	bottom	No further vertical excavation req'd
7/16/99	1405	Pit 10	Par D-C25S-5	4.9	bottom	No further vertical excavation req'd
7/16/99	1425	Pit 11	Par D-C75S-5	6.1	bottom	No further vertical excavation req'd
7/16/99	845	Pit 12	Par D-C100S-5	4.4	bottom	No further vertical excavation req'd
7/16/99	900	Pit 13	Par D-C75SW-5	7.3	bottom	No further vertical excavation req'd
7/16/99	952		Par D-WNW75-0.5	14	west-west-north at 75	No further excavation req'd
	955		Par D-WNW75-1.0	5.9	" "	No further excavation req'd
	1004		Par D-WNW125-1.0	5.1	" "	No further excavation req'd
7/16/99	1014		Par D-WNW175-0.5	8.4	west-west-north at 175	No further excavation req'd
	1017		Par D-WNW175-1.0	6	" "	No further excavation req'd
7/16/99	1022		Par D-WNW225-0.5	10	west-west-north at 225	No further excavation req'd
	1025		Par D-WNW225-1.0	4.4	" "	No further excavation req'd
7/16/99	1122		Par D-WNW275-0.5	4	west-west-north at 275	No further excavation req'd
	1125		Par D-WNW275-1.0	3.7	" "	No further excavation req'd
7/16/99	1335		Par D-NNW75-1.0	4.5	" "	No further excavation req'd



TABLE 6-2
(CONTINUED)

Date	Time	Sample No.	Arsenic (mg/kg)	Location	Comments
7/27/99	1320	Par D-C1	8.7	northwest (west border)	No further excavation req'd
7/27/99	1335	Par D-C2	3.8	west border	No further excavation req'd
7/27/99	1350	Par D-C3	3.9	west border	No further excavation req'd
7/27/99	1355	Par D-C4	4.9	southwest (west border)	No further excavation req'd
7/27/99	1330	Par D-C5	3.4	northwest (north border)	No further excavation req'd
7/28/99	942	Par D-C6	6.4	central	No further excavation req'd
7/28/99	1325	Par D-C7	3.7	central	No further excavation req'd
7/28/99	1315	Par D-C8	3.5	southern border	No further excavation req'd
7/29/99	1322	Par D-C9	3.9	north border	No further excavation req'd
7/30/99	1415	Par D-C10A	3.6	central	No further excavation req'd
7/30/99	1422	Par D-C11A	5.2	central	No further excavation req'd
7/28/99	1330	Par D-C12	4	south border	No further excavation req'd
8/2/99	1423	Par D-C13A	4.7	north border	No further excavation req'd
8/3/99	804	Par D-C14B	5	central	No further excavation req'd
7/28/99	1340	Par D-C15	14	central	No further excavation req'd
7/30/99	1345	Par D-C16A	3.9	south border	No further excavation req'd
7/29/99	1335	Par D-C17	4.8	north border	No further excavation req'd
8/2/99	1349	Par D-C18A	4.4	central	No further excavation req'd
7/29/99	1345	Par D-C19	4.9	central	No further excavation req'd
8/2/99	1328	Par D-C20A	4.4	northeast corner	No further excavation req'd
7/28/99	1400	Par D-C21	8.6	south border	No further excavation req'd
7/29/99	1355	Par D-C22	9.9	east border	No further excavation req'd
7/29/99	1350	Par D-C23	5.5	east border	No further excavation req'd
7/30/99	1405	Par D-C24	4.5	northwest Par D-C14	No further excavation req'd
7/30/99	1400	Par D-C25	4.9	northeast Par D-C14	No further excavation req'd
7/30/99	1355	Par D-C26	3.7	southeast Par D-C26	No further excavation req'd
7/30/99	1425	Par D-C27	3.9	south Par D-C11	No further excavation req'd
7/28/99	1405	Par D-C28	5.6	southeast corner	No further excavation req'd
7/30/99	1420	Par D-C29	4.9	west Par D-C10	No further excavation req'd
7/30/99	1335	Par D-C30	3.8	north Par D-C16	No further excavation req'd
7/30/99	1320	Par D-C31	5	east Par D-C16	No further excavation req'd
7/30/99	1325	Par D-C32	4.4	south Par D-C16	No further excavation req'd
7/30/99	1330	Par D-C33	3.6	west Par D-C16	No further excavation req'd
8/4/99	843	Par D-C34A	4.4	east of Par D-C13	8/04/99, addit 4 in. excavated over area approx. 15 ft by 15 ft around C34
8/2/99	1420	Par D-C35	6.4	south of Par D-C13	No further excavation req'd



**TABLE 6-2
(CONTINUED)**

Date	Time		Sample No.	Arsenic (mg/kg)	Location	Comments
8/2/99	1416		Par D-C36	3.8	west of Par D-C13	No further excavation req'd
8/2/99	1413		Par D-C37	4.7	north of Par D-C13	No further excavation req'd
8/2/99	1346		Par D-C38	6.8	east of Par D-C18	No further excavation req'd
8/2/99	1353		Par D-C39	7	south of Par D-C18	No further excavation req'd
8/2/99	1355		Par D-C40	5.7	west of Par D-C18	No further excavation req'd
8/2/99	1359		Par D-C41	7.8	north of Par D-C18	No further excavation req'd
8/4/99	855		Par D-C42A	3.7	east of Par D-C20	Addit 20 ft by 10 ft by 2 ft excavated around C42
8/2/99	1336		Par D-C43	4.3	south of Par D-C20	No further excavation req'd
8/2/99	1340		Par D-C44	4.7	west of Par D-C20	No further excavation req'd
8/2/99	1333		Par D-C45	3.7	north of Par D-C20	No further excavation req'd
8/3/99	759		Par D-C46	4.2	east of Par D-14A	No further excavation req'd
8/3/99	808		Par D-C47	4.1	south of Par D-14A	No further excavation req'd
8/3/99	812		Par D-C48	4.2	west of Par D-14A	No further excavation req'd
8/3/99	815		Par D-C49	3.8	north of Par D-14A	No further excavation req'd
8/4/99	846		Par D-C50	3.9	southwest of Par D-C34	No further excavation req'd
8/4/99	859		Par D-C51	4.8	east of Par D-C42	No further excavation req'd
8/4/99	903		Par D-C52	4.6	south of Par D-42	No further excavation req'd
7/23/99	1140		ParDo-C1	4.1	west end	Over-excavated area between borings B1 and B2 where arsenic-impacted soils were deposited; deposited soils were removed to native where confirmation samples were collected.
7/22/99	1525		ParDo-C2	5.2	central	
7/22/99	1528		ParDo-C3	5.7	central	
7/22/99	1530		ParDo-C4	4.9	central	
7/22/99	1535		ParDo-C5	5.3	east end	

exhibited total arsenic concentrations above 14 mg/kg, additional soil was excavated and additional confirmation samples were collected. If the confirmation sample results exhibited total arsenic concentrations below 14 mg/kg, no further excavation was conducted in the isolated excavation areas. Results for the post-excavation confirmation samples collected in the pits are presented in Table 6-2. Appendix E contains the laboratory reports for the arsenic excavation confirmation samples. Figure 6-1 shows the isolated excavation pits where confirmation samples were collected.



Arsenic-Impacted Area

At the completion of the overall excavation (an area measuring approximately 400 by 300 feet), a 75-foot grid was placed over the area for confirmation sampling. Samples designated Par D-C1 through C52 were collected in the grid to ensure that soil impacted with arsenic at concentrations greater than 14 mg/kg were removed. Figure 6-3 shows the surveyed locations of these samples, and Table 6-2 presents the analytical results. Confirmation samples exhibiting total arsenic concentrations above 14 mg/kg were further delineated and excavated until total arsenic concentrations were below 14 mg/kg. Results of the additional excavation and confirmation samples are also presented in Table 6-2. Appendix E contains the laboratory reports for the confirmation samples.

The soil placed in the northwest portion of Parcel D was excavated and stockpiled for disposal at a Class III landfill. At the completion of the excavation, five confirmation samples (Par Do-C1 through C5) were collected to ensure that the arsenic-impacted soil has been removed. Results for these samples indicate total arsenic levels of 4.1 to 5.7 mg/kg (see Table 6-2). Figure 6-4 shows the surveyed sample locations for the northwest portion of Parcel D.

6.2.1 Sample Identification

Confirmation samples collected during the Parcel D excavation program were assigned a unique identification number. This number is used on all documentation relating to the collection, handling, analysis, and reporting of the analytical results of each sample. The following templates were used:

Isolate Excavation Pits

ParD-C-x-y

where



Par D= Parcel D

C = confirmation identification

x = distance in feet and direction of pit (e.g., 100N)

y = pit wall number (e.g. 1 = north, 2 = east, 3 = south, 4 = west)

Grid Layout of Rectangular Area

ParD-C-x

where

Par D= Parcel D

C-x = confirmation identification (e.g., C-1, numbered sequentially)

6.2.2 Sample Handling and Custody

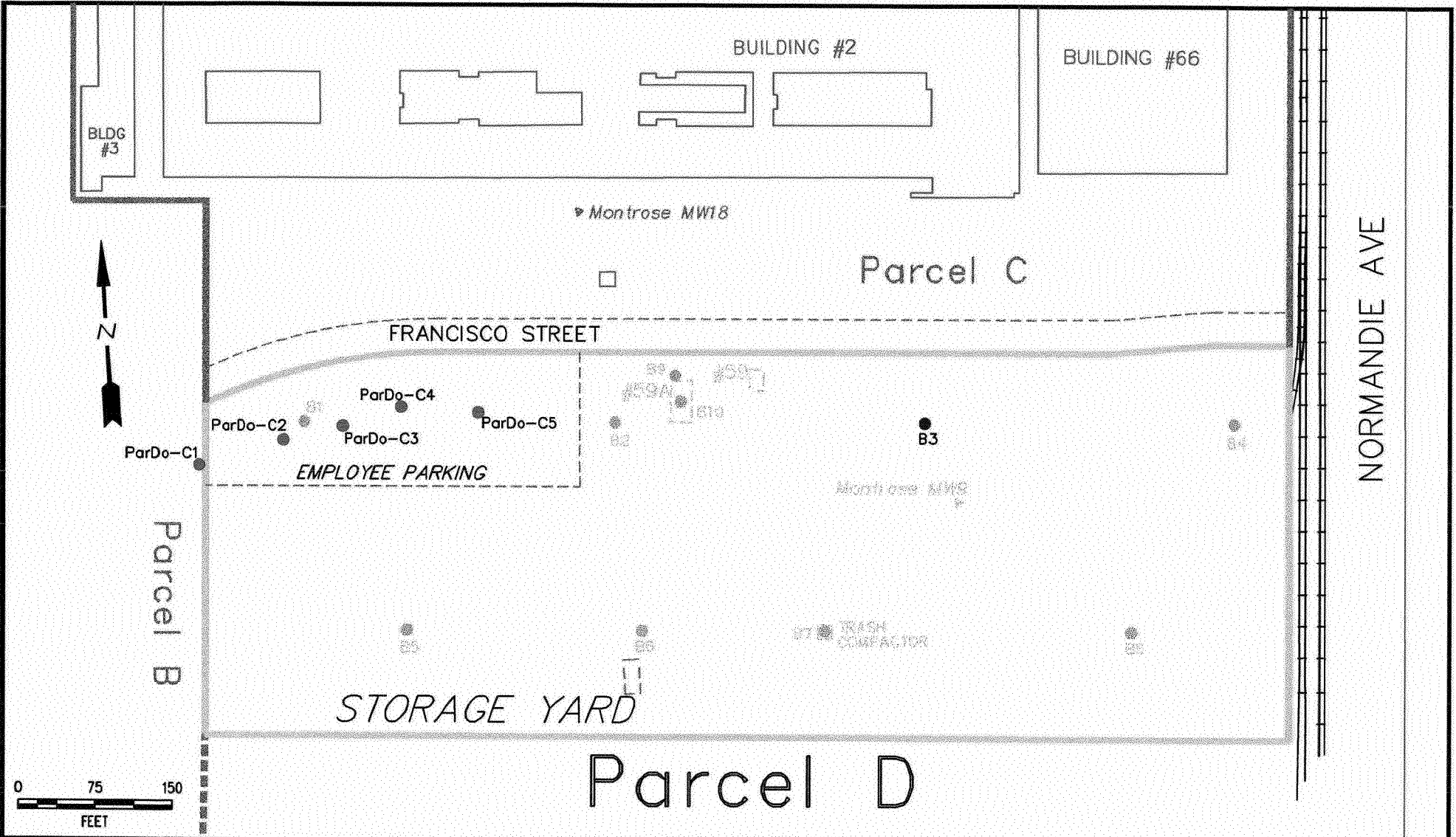
Confirmation samples were collected in 4-oz glass jars supplied by the laboratory. Completed chain-of-custody forms accompanied the samples to the laboratory, where the laboratory custodian received and inspected the sample containers. Detailed procedures are presented in the Parcel D Sampling and Analysis Plan (IESI 1999e).

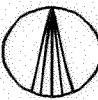
6.2.3 Laboratory Analysis

The laboratory analytical method used on all samples during the Parcel D excavation and confirmation program was EPA Method 6010 for arsenic.

6.2.4 Confirmation Sampling Results

As mentioned, when confirmation samples exhibited total arsenic concentrations above 14 mg/kg, additional excavations were conducted until total arsenic concentrations reached below 14 mg/kg. The results for the confirmation samples collected are summarized in Table 6-1.



 <p>INTEGRATED Environmental Services, Inc. 3990 Westerly Place, Suite 210 (949) 852-9050 Newport Beach, CA 92660</p>	<p>TITLE: Confirmation Sample Locations in the Northwest Corner of Parcel D Boeing C-6 Facility Los Angeles, CA</p>	<p>DWN: JDL</p>	<p>DES.: JDL</p>	<p>PROJECT NO.: BOC6\PDSIR</p>
		<p>CHK: JFH</p>	<p>APPD: JPO</p>	
		<p>DATE: 09/17/99</p>	<p>REV.: 1</p>	<p>FIGURE NO.: 6-4</p>



6.3 HEALTH AND SAFETY MONITORING

In accordance with Occupation Safety and Health Administration (OSHA) standards (CFR Title 29 part 1910.120), a site-specific health and safety plan was prepared for the Parcel D excavation. The detailed health and safety plan is provided in Appendix C of the Parcel D Excavation Plan (IESI 1999d). A discussion of personnel requirements and health and safety monitoring is presented below.

6.3.1 Personnel Requirements

All field personnel involved with the Parcel D excavation activities were OSHA 40-hour certified, had completed annual refresher courses (as required), and actively participated in a medical surveillance program that meets the criteria of 29 CFR 1910.120. In addition, each field member was required to review and sign the health and safety plan prior to the first day of work and to attend the health and safety meeting that was conducted at the beginning of each day.

6.3.2 Health and Safety Monitoring

Health and safety monitoring was conducted during excavation activities. Each day, two field workers were monitored for arsenic concentrations in breathing-zone dust using “GilAir 3” personal breathing air monitoring devices. In addition, three stationary “AIRCON 2” atmosphere monitoring devices were used to monitor arsenic concentrations in the air along the perimeter of the excavation area. The dust filters were submitted to a laboratory for arsenic analysis, initially with a 24-hour turnaround time and later, once the initial samples indicated that no detectable concentrations of arsenic were in the air, on a 3-to-5-day turnaround. Laboratory reports for the air samples are presented in Appendix F.